

REMARKS

Claims 2 and 3 were previously cancelled.

Claims 1 and 12 are amended.

No new subject matter is added.

Reconsideration and allowance of claims 1 and 4-14 is respectfully requested in light of the following remarks.

Claim Rejections – 35 U.S.C. § 102

Claims 1, 4-6 and 9-13 are rejected under 35 U.S.C. § 102(b) as being anticipated by US Patent No. 5,188,976 to Kume et al ("Kume"). The applicant disagrees.

Independent claims 1 and 12 are amended to recite, *inter alia*, that the tunnel oxide layer has a first thickness, that that gate oxide layer has a second thickness, and that the second thickness is different from the first thickness. These amendments are fully supported by the original application at, e.g., page 6, lines 28-31.

It is alleged that Kume teaches a tunnel oxide layer 4 (FIGs. 3A-3E) and a gate oxide layer 4 (FIGs. 3A-3E). However, it is apparent from Kume FIGs. 3A-3E that the thicknesses of the alleged tunnel oxide layer and the alleged gate oxide layer are not different.

Consequently, Kume fails to anticipate claims 1 and 12 because it does not show the identical invention in as complete detail as contained in the claim. MPEP 2131, *citing Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236 (Fed. Cir. 1989).

Claims 4-6, 9-11, and 13 depend from claim 1. Thus, Kume does not anticipate claims 4-6, 9-11, and 13 because it fails to teach every feature inherent to the claims (MPEP 2131).

Claim Rejections – 35 U.S.C. § 103

Claims 1, 4-6, and 8-14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over US Patent Application Publication 2002/0008278 A1 to Mori ("Mori") in view of US Patent No. 5,292,681 to Lee et al ("Lee"). The applicant disagrees.

Independent claims 1 and 12 recite, *inter alia*, "prior to formation of the tunnel oxide layer and the gate oxide layer, *implanting impurity ions* into the first and second active regions *to adjust a threshold voltage of a MOS transistor*" (emphasis added).

It was stated in the final office action mailed 27 July 2004 that "Mori discloses all claimed subject matter, but fails to expressly disclose the feature of implanting impurity ions prior to formation of the gate oxide layer and the tunnel oxide layer." However, Lee is

alleged to teach, in Figs. 19-21 and 25-26, the feature of implanting impurity ions into the cell array region and peripheral circuit region *"to form a well"* prior to formation of the gate oxide layer and tunnel oxide layer (emphasis added). Thus, it is apparent that the Examiner is specifically alleging that it is the "wells" of Lee FIGs. 19-21 and FIGs. 25-26 that are formed by an ion-implantation process.

Independent claims 1 and 12 are further amended to recite, "prior to formation of the tunnel oxide layer and the gate oxide layer, *implanting impurity ions* into the first and second active regions *to form a well*" (emphasis added). This amendment is fully supported by the original application at, e.g., page 6, lines 23-24 of the specification, where it is stated "ion-implantation *processes* for forming a well *and* adjusting a threshold voltage of MOS transistors are applied" (emphasis added). In other words, the specification speaks of more than one ion-implantation process - a process to form a well, and a process to adjust a threshold voltage.

Thus, while Lee may teach the feature of implanting impurity ions prior to formation of the tunnel oxide layer and the gate oxide layer *to form a well*, it is yet to be shown that Lee teaches the recited feature of implanting impurity ions prior to formation of the tunnel oxide layer and the gate oxide layer *to adjust a threshold voltage of a MOS transistor* (emphasis added).

The Examiner states that "in order to form a well and to adjust a threshold voltage of a MOS transistor, implanting impurity ions into the active regions is generally used." While this may be an accurate statement, it teaches nothing about *when* the ion-implantation for adjusting the threshold voltage occurs relative to the process of forming the gate oxide layer and the tunnel oxide layer.

Consequently, the Mori/Lee combination fails to establish *prima facie* obviousness for claims 1 and 12 because it fails to teach or suggest all the features of the claim. MPEP 2143.03.

Furthermore, Mori teaches (FIG.1; paragraph 0124) that ion-implantation is conducted in the peripheral circuit region "for controlling the channel impurity concentration" after the tunnel oxide film 21a and the gate oxide film 21b have been formed. It is well-known that doping the channel region with impurities adjusts the threshold voltage of a transistor. Thus, even if Lee taught the feature of implanting impurity ions prior to the formation of the tunnel oxide layer and the gate oxide layer to adjust a threshold voltage, there would be no suggestion to modify Mori in such a manner because Mori clearly teaches

that such ion-implantation occurs *after* the tunnel oxide film 21a and the gate oxide film 21b are formed. In other words, Mori teaches away from making such a modification.

Consequently, the Mori/Lee combination also fails to establish *prima facie* obviousness for claims 1 and 12 because there is no suggestion or motivation to modify Mori with the alleged teachings of Lee in the manner that is suggested. MPEP 2143.01.

Claims 4-11 and 13 depend from claim 1. Consequently, claims 4-11 and 13 are patentable over the Mori/Lee combination because any claim that depends from a nonobvious independent claim is also nonobvious. MPEP 2143.03, citing *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

Claim 7 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Mori in view of US Patent No. 5,976,934 to Hayakawa ("Hayakawa"). The applicant disagrees.

Claim 7 depends from claim 1. Consequently, claim 7 is patentable over the Mori/Lee/Hayakawa combination because any claim that depends from a nonobvious independent claim is also nonobvious. MPEP 2143.03, citing *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

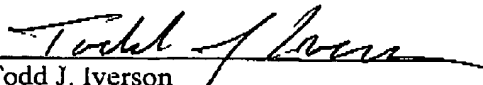
Conclusion

For the foregoing reasons, reconsideration and allowance of claims 1 and 4-14 is requested. Please telephone the undersigned at (503) 222-3613 if it appears that an interview would be helpful in advancing the case.

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Respectfully submitted,

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